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(54) **BINDING MOUNTING SYSTEM AND METHOD OF RAPIDLY MOUNTING FRONT AND HEEL JAWS OF A SKI BINDING**

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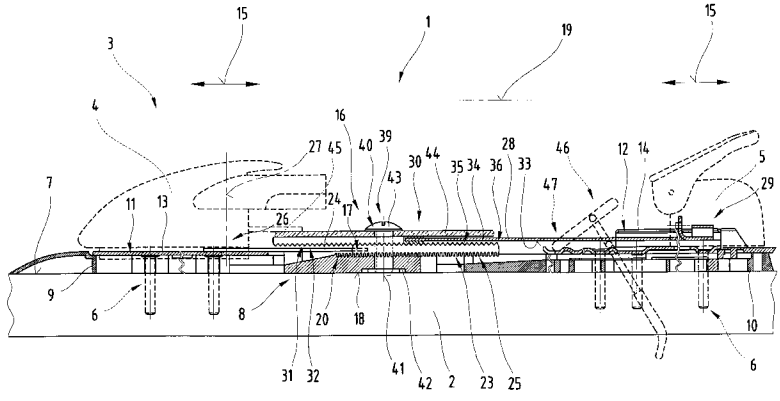
(57) **ABSTRACT**

A binding mounting system for rapidly mounting a slidable front jaw and a slidable heel jaw of a ski binding onto a ski having a top face, comprises a plate-shaped base element having a bearing surface and mounted on the top face of the ski, front rear longitudinal guide mechanisms on the base element, the guide mechanisms preventing vertical and transverse displacements of the front jaw and the rear jaw to be mounted on the base element relative to the bearing surface thereof, and a positioning and locking device immobile relative to the base element and mounted thereon between the front and rear longitudinal guide mechanisms at a distance therefrom. The positioning and locking device has a top face remote from the base element and at least one rigid raised portion with steep flanks on the top face. At least one bar-shaped linking member extends towards a respective one of the guide mechanisms and has an end linked to a respective one of the jaws, the linking member having several recesses in an end opposite to the end linked to the one jaw, the recesses matching the raised portion to provide a positive fit between the raised portion and one of the recesses.

20 Claims, 5 Drawing Sheets



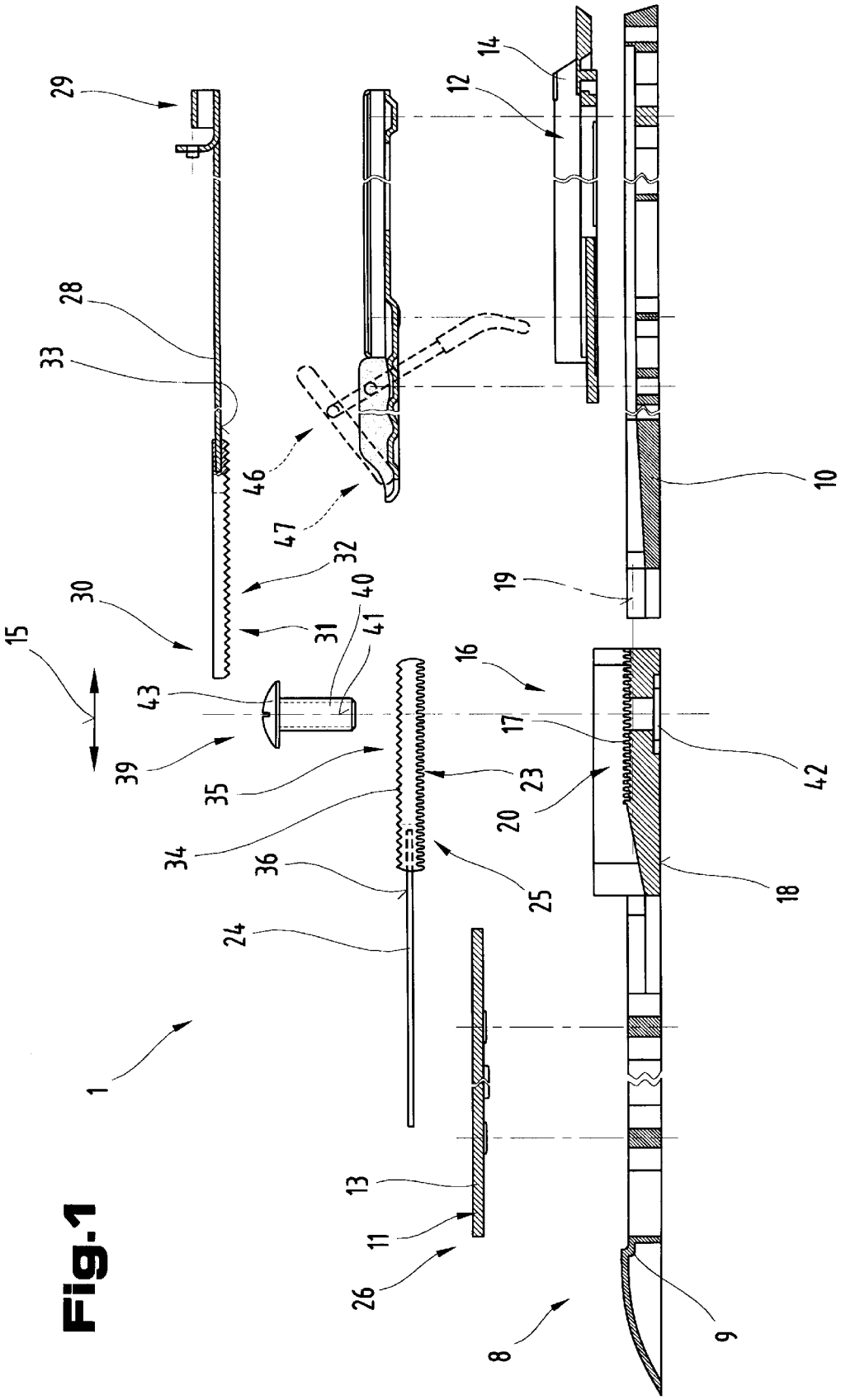

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Fig.1

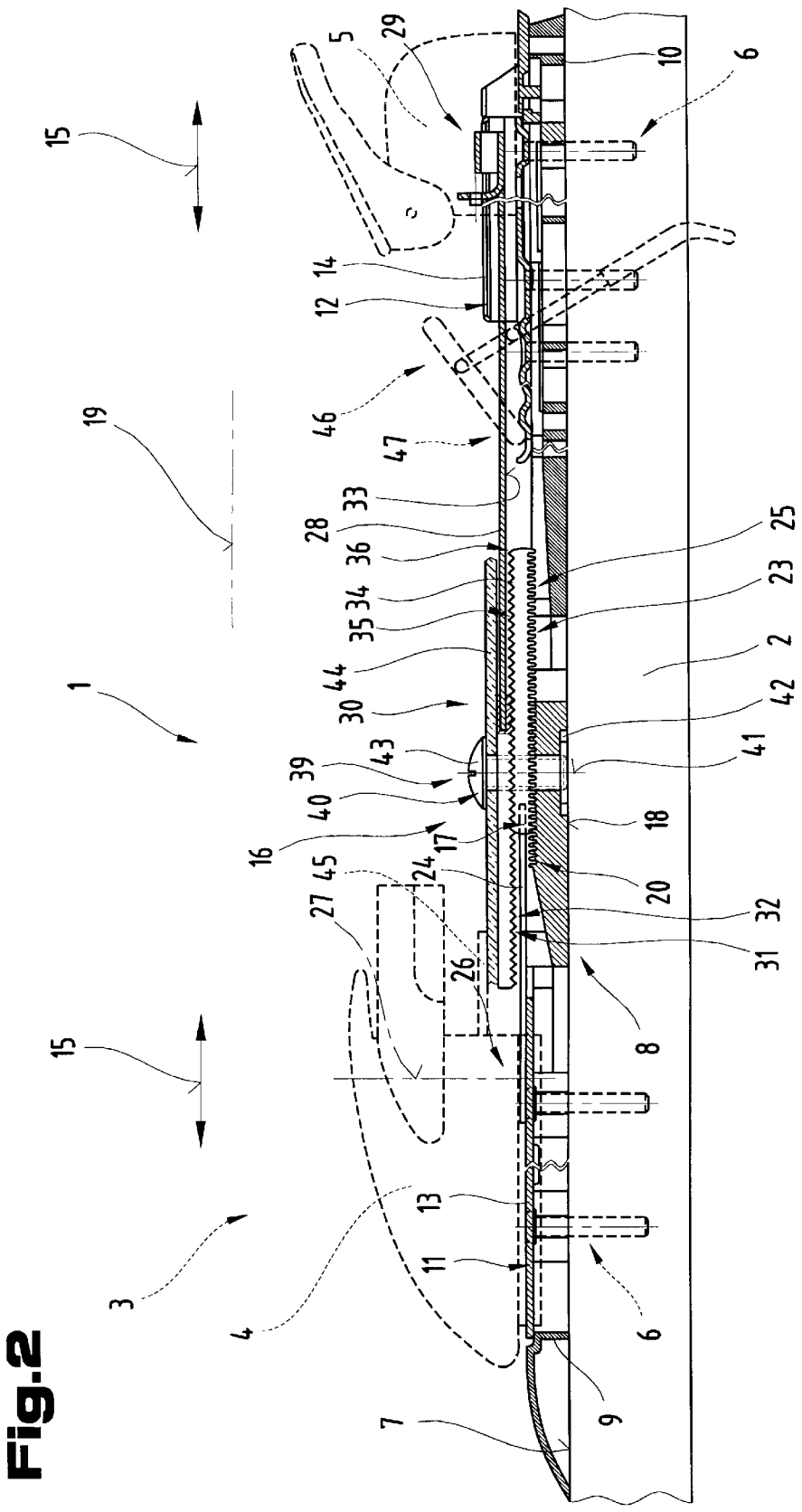
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Fig.2

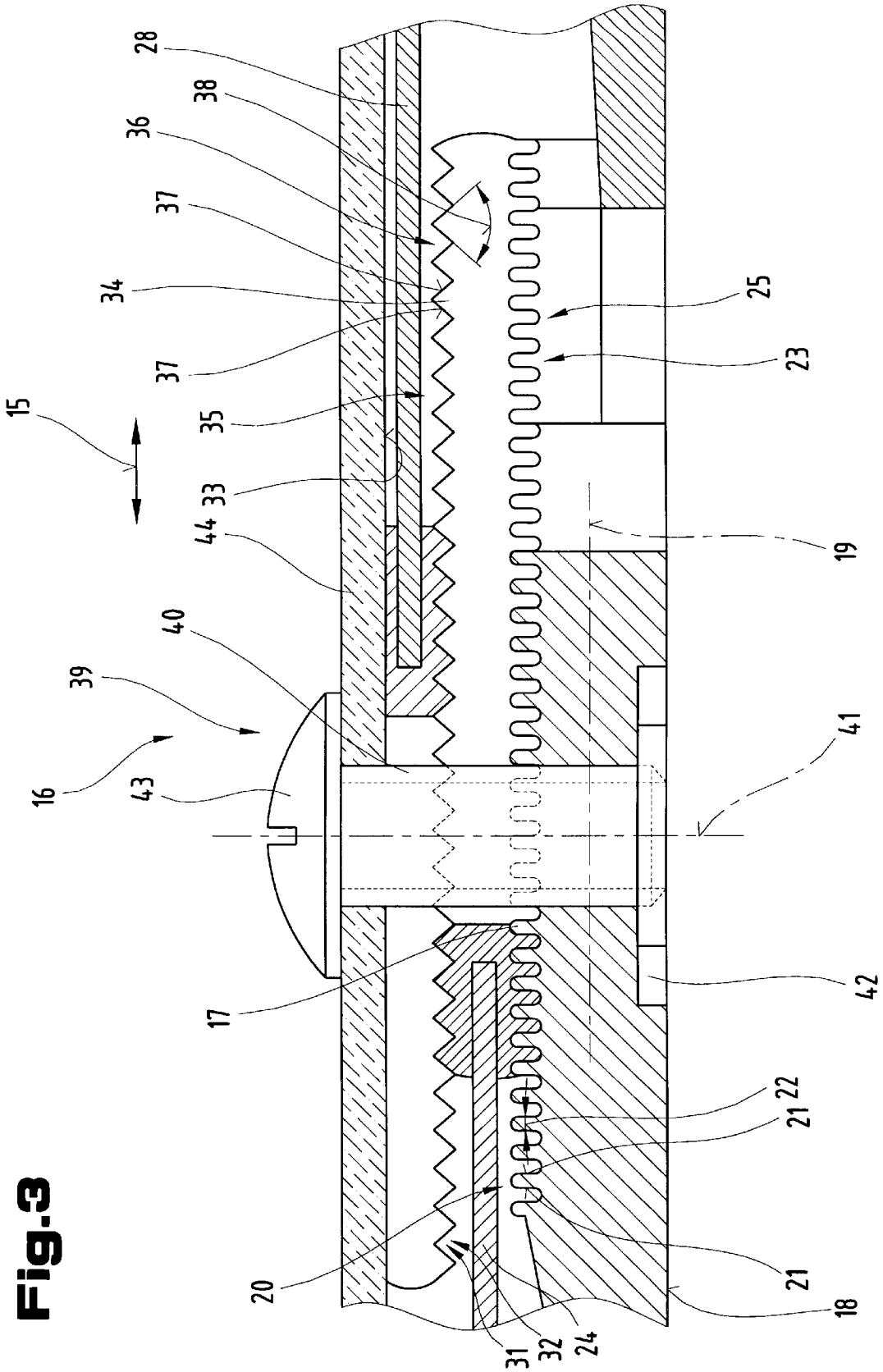
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Fig.3

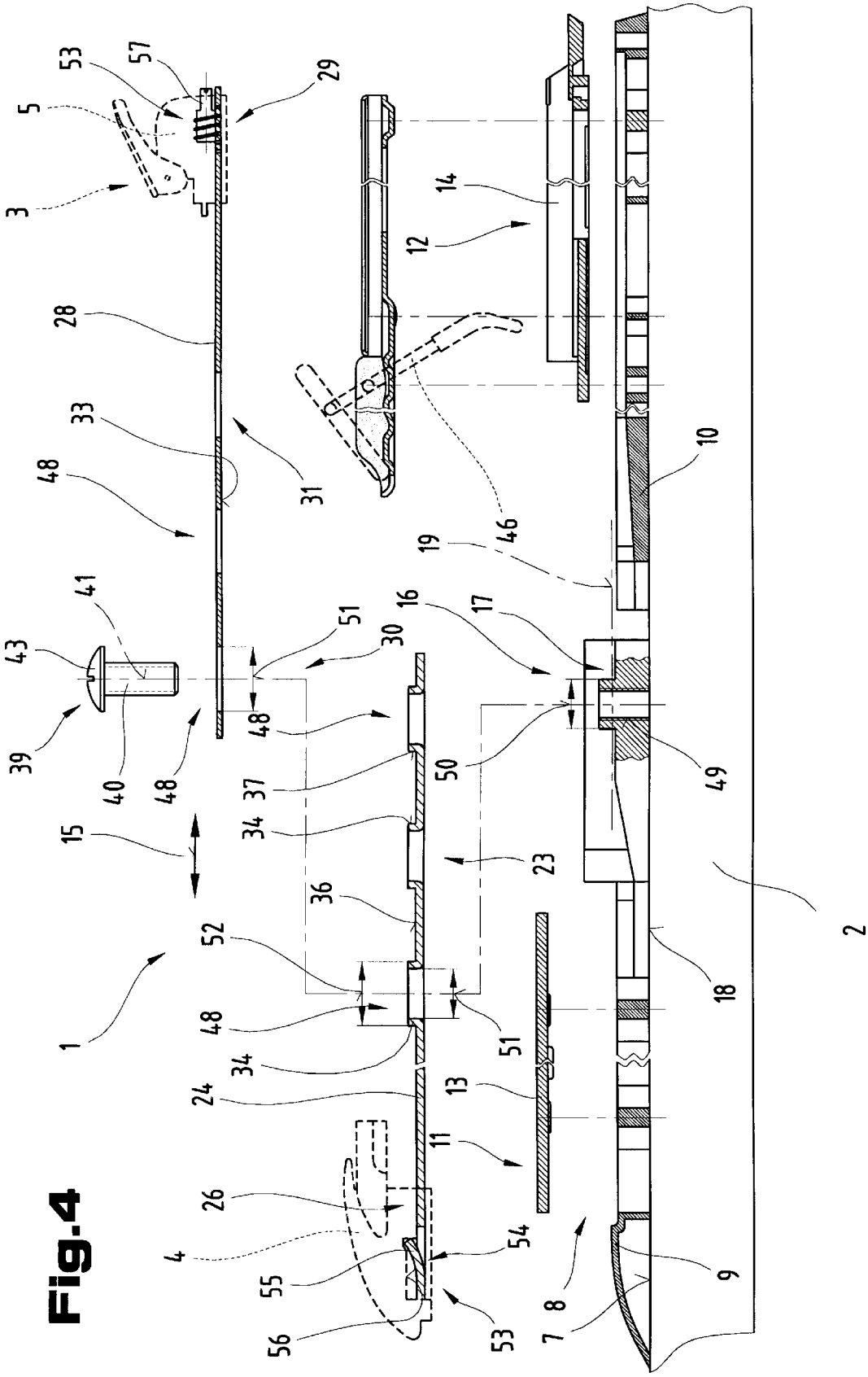
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Fig.4

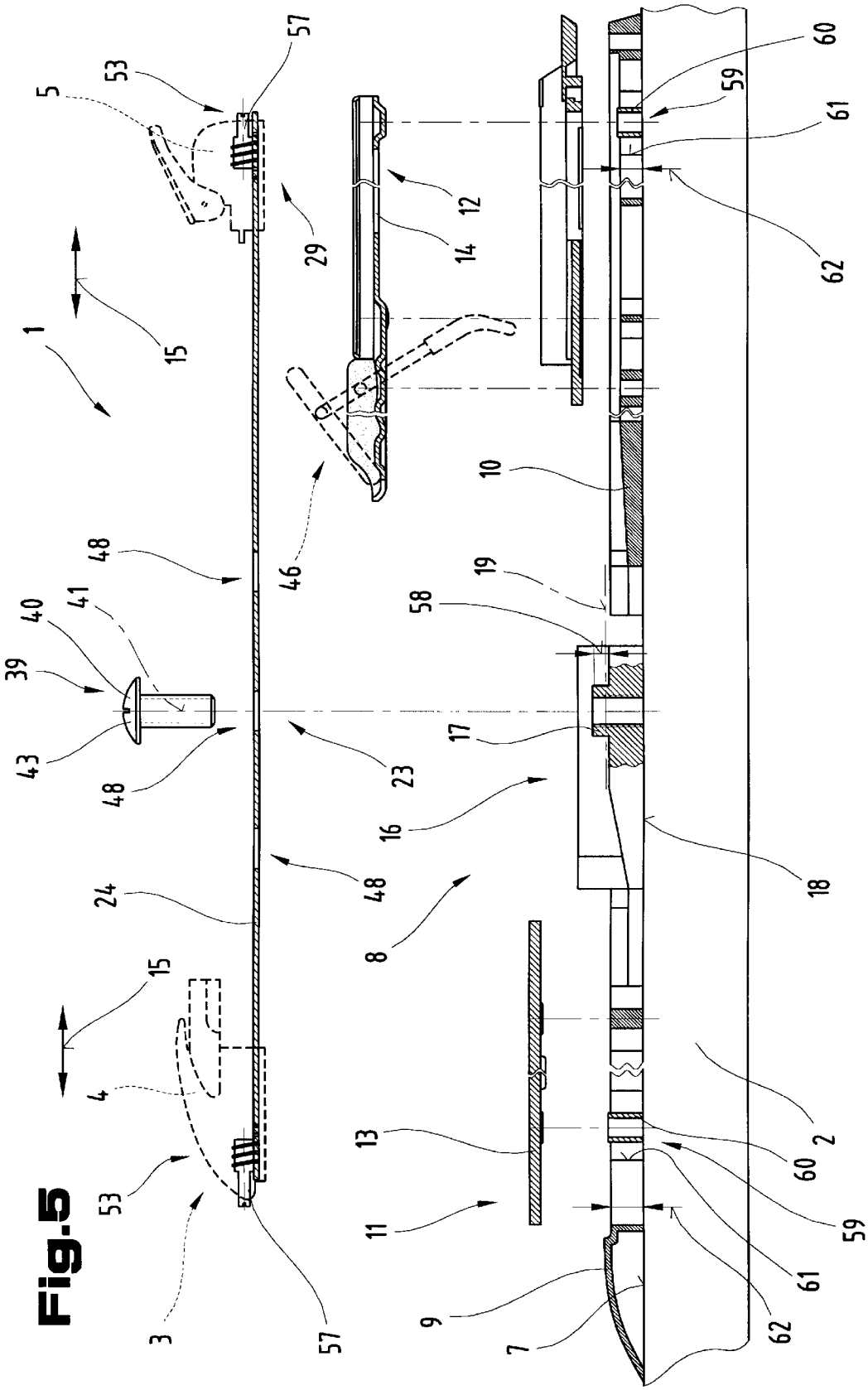
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Fig.5

BINDING MOUNTING SYSTEM AND METHOD OF RAPIDLY MOUNTING FRONT AND HEEL JAWS OF A SKI BINDING

BACKGROUND OF THE INVENTION

1. Field of the invention

The invention relates to a binding mounting system for rapidly fitting a front and heel jaw of a ski binding onto a ski, having at least one plate-shaped base element mounted on a top face of a ski and at least a first and a second longitudinal guide mechanism, formed by the base element or provided separately and secured to the base element, in order to prevent vertical and transverse displacements of a respective front and heel jaw, to be mounted thereon, relative to a bearing surface of the base element on a ski and having a positioning and locking device which is immobile relative to the base element, mounted between the front and the rear longitudinal guide mechanism spaced at a distance thereafter, by means of which slidable front and heel jaws can be positioned and secured across at least one bar-shaped linking member as well as a method of rapidly fitting front and heel jaws of a ski binding onto a ski having a respective longitudinal guide mechanism co-operating with the front and heel jaw, spaced at a distance apart from one another and in which the front and heel jaws can be positioned and secured.

2. The Prior Art

Document DE 41 35 899 A1 describes a ski binding which enables a synchronous adjustment of the front and heel jaws in opposite directions by means of a gear mechanism between the front and heel jaws. To this end, a gear wheel is rotatably mounted in the central region between front and heel jaws and bar-type racks lying diametrically opposite one another engage in the central gear wheel. The end region of the first rack remote from the gear wheel is connected to the front jaw and the end region of the second rack remote from the gear wheel is connected to the heel jaw. The front and heel jaws are slidably retained in their respective longitudinal guide positions by the racks. A checking device also co-operates with the central gear wheel, by means of which the rotating action of the gear wheel can be locked. The checking device must be capable of withstanding high turning moments and high torsional forces and is therefore robust and of a relatively complex design.

SUMMARY OF THE INVENTION

The underlying objective of this invention is to provide a binding mounting system by means of which a ski binding can be provided to the customer's requirements by the retail outlet, rapidly and in a simple manner, enabling the front and heel jaws to be locked in the appropriate positions in a practical manner.

This objective is achieved in that the positioning and locking device has at least one rigidly moving raised portion with steep flanks to provide a positive-fit meshing action in at least one of several matching recesses or orifices in a co-operating region of a bar-shaped linking member extending in a direction towards the front or rear longitudinal guide mechanisms in order to link the end region thereof to a front or heel jaw.

The advantage is that a plate-shaped base element is provided and pre-mounted on an appropriate ski at the factory. A retail outlet or distributor then merely has to assemble a ski binding unit to suit the wishes of the customer

or purchaser and place it on the appropriate ski by means of the binding mounting system, which is then ready for use within a short time without the need to drill any bores. Due the modular design of the structure, no more waiting times are needed for the fitting process. Assembly is assisted by the central positioning and locking device provided as the central element of the binding mounting system, whereby both the front and heel jaws of a ski binding can be simultaneously retained and locked by means of this positioning and locking system. Consequently, the corresponding ski binding can be assembled and adjusted on an appropriate ski fitted with a pre-mounted binding mounting system in a very short time and without any difficulty. However, not only does the structure of the positioning and locking device enable front and heel jaws to be assembled rapidly, it also permits numerous options for adjusting the ski binding relative to the ski. In particular, the design of the positioning and locking device enables the distance between front and back jaws to be adjusted and locked on the one hand whilst the relative position of the entire ski binding unit can be adjusted with respect to the base element and with respect to the ski and locked in the desired position. Using this central positioning and locking device, which is relatively simple in structure, a whole series of adjustments can therefore be made and a central locking member operated to produce a reliable lock or fastening in the desired positions selected.

Another embodiment, where the positioning and locking device has several raised portions running transversely to the longitudinal direction of the base plate in the plane parallel with the bearing surface of the base element, in particular teeth with steep flanks to mesh in a positive fit in teeth of a matching design in a facing end region of the bar-shaped linking member to the front or heel jaw, is of advantage since it allows relatively fine adjustments to be made whilst nevertheless providing a very stable and strong positioning and locking device and bar-shaped binding elements.

Advantages are also to be had from an embodiment, where the positioning and locking device has a screw-type fixing member or a threaded nut with a screw axis running perpendicular to the bearing surface of the base element, by means of which the bar-shaped linking member can be vertically adjusted relative to the raised portion or teeth, optionally providing a releasing action or a checking action and in the latter case the front or the heel jaw is secured and checked in the longitudinal direction of the co-operating longitudinal guide mechanism or when the fixing member or the threaded nut is in a released position, the facing end region of the bar-shaped linking member is released so that it can be displaced in a vertical direction or in the direction of the flanks of the raised portions and is prevented from displacement in the locked position, which provides a fixing member that is safe in operation and easy to operate and also conforms to high safety standards.

Another advantageous embodiment offers recesses or teeth of relatively deep dimensions on the bottom flat face of the bar-shaped binding element, which are capable of withstanding relatively high forces as compared with laterally disposed teeth.

Another advantage of the a binding mounting system is that the second jaw body can be positioned in a stepped arrangement relative to the first jaw body without having to alter the position of the first jaw body when adjusting the second jaw body.

An embodiment, where the end regions of the two flush-aligned linking members facing the positioning and locking

device are of a fork-shaped design or have slit-shaped nicks running in the longitudinal direction thereof, starting from the ends facing the positioning and locking device, offers an advantage because the fixing member can be arranged centrally relative to the binding elements, as a result of which a uniform, evenly balanced contact force can be exerted on the binding elements.

The two-part design of the binding element reduces any undesirable stiffening of a ski in its central region once the binding mounting system has been fitted.

The binding mounting system obviates the need to set the positioning and locking device independently, thereby reducing the time and effort needed for assembly purposes.

The invention also permits high pick-up forces in the fixing member, thereby producing an arrangement that is highly unlikely to be ripped out.

Also of advantage is that the braking device does not have to be screwed to the ski separately either, thereby reducing the assembly time needed by the retailer or shop.

An embodiment with universal adjustment options and a rapid locking action in the desired position, whilst simultaneously permitting longitudinal compensation during bending of the ski in order to prevent any strain is also of advantage.

Also of advantage is an embodiment, in which the first bar-shaped linking member projects out from the front jaw and the second strip-shaped linking member from the heel jaw or the first longitudinal guide mechanism is designed to push in the front jaw with the bar-shaped linking member and the second longitudinal guide mechanism to push in the heel jaw with the bar-shaped linking member, starting from the end regions thereof remote from one another, because only the unit comprising the binding element and jaws needs to be pushed into and locked in the desired position.

The embodiment, where a cover element of a substantially U-shaped cross section is provided for the positioning and locking device, offers protection against icing and a build-up of snow whilst providing more design options.

An additional fixing member for the cover element, such as a fixing screw, is no longer needed due to a practical embodiment wherein, in order to retain the front and heel jaws by means of the central fixing member, the cover element can be mounted above the positioning and locking device, thereby at least partially covering the bar-shaped linking member.

Another adjustment option for a jaw relative to the binding element is provided by a binding mounting system, wherein the front and/or heel jaw can be adjusted in the longitudinal direction of the bar-shaped linking member by means of a threaded spindle arrangement.

Due to an other embodiment, wherein the bar-shaped linking member can be connected to or removed from the front and/or heel jaw by means of a detachable connecting device if necessary, compact packing units are provided so that the individual components can be readily re-assembled by the user in a straightforward manner.

When the teeth of the positioning and locking device in the longitudinal section of the base element are designed as square-shaped raised portions or recesses with steep, e.g. almost vertical, flanks standing up from the horizontal plane, a coupling or jaw part which can be set to a desired position will no longer slide once placed in the relevant position and the other jaw part can then be set and positioned effortlessly in the binding mounting system.

An embodiment, where the top face of the first bar-shaped linking member and the underside of the second bar-shaped linking member have triangular or wave-shaped raised portions or teeth with relatively flat flanks in longitudinal section, permits a relative sliding action between the first binding element and the second binding element without having to also move the second binding element when one of the two binding elements is adjusted.

The embodiment, wherein the end regions of the two linking members facing one another overlap with one another in the operating position and the fixing member is inserted through the overlapping region of the two linking members and can be applied to the positioning and locking device, offers a sufficiently large adjustment range and a secure fastening for the front and heel jaws.

Finally, pre-mounting the binding mounting system and the plate-shaped base element on the ski at the factory, is particularly advantageous because there is no need for the retailer or end-user to drill any holes in or make any other modifications to the ski in order to fit the binding mounting system or the ski binding and the sports article can be combined with the desired ski binding components in a modular design.

Independently of the above, however, the objective set by the invention can also be achieved by a method of rapidly fitting front and heel jaws of a ski binding onto a ski having a respective longitudinal guide mechanism co-operating with the front and heel jaw, spaced at a distance apart from one another and in which the front and heel jaws can be positioned and secured.

The advantages reside in the fact that the desired ski binding unit can be mounted on the ski in a relatively short time without the need for any tensioning work, e.g. drilling bores. Another advantage is the fact that the modular structure is compatible with the most varied of coupling components, as may be required by the customer, i.e. front and heel jaws can be fitted on a ski with a pre-fitted binding mounting system. Another advantage resides in the fact that an adjustment range of approximately 100 mm can be provided to cater for the shortest and longest length of sole without any problem. Also of advantage is the fact that both the distance between front and heel jaws and the relative position of the ski binding unit with respect to the ski can be adjusted and locked in a simple manner by means of a central fixing member. Another advantage is that the stages in the adjustment path rule out any unacceptable sliding in to intermediate positions.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be described in more detail below with reference to examples of embodiments illustrated in the drawings, wherein

FIG. **1** shows an exploded diagram in partial section showing the binding mounting system proposed by the invention, to be pre-mounted on a ski, seen from a side view and in a very simplified format;

FIG. **2** shows a very simplified, schematic diagram of the binding mounting system illustrated in FIG. **1** assembled with a ski, the broken lines indicating front and heel jaws;

FIG. **3** shows an enlarged section showing the part-region of the fixing and positioning device of the binding mounting system illustrated in FIG. **2**;

FIG. **4** shows a very simplified, exploded diagram in partial section, showing a different embodiment of the binding mounting system proposed by the invention with a single raised portion on the positioning and locking device;

FIG. **5** shows a very simplified, exploded diagram in partial section from a side view, showing another embodi-

ment of the binding mounting system proposed by the invention with a one-part binding element between front and heel jaws.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

Firstly, it should be pointed out that the same reference numbers and the same component names are used to denote same parts in the different embodiments described, so that disclosures made throughout the description can be transposed in terms of meaning to same parts bearing the same reference numbers or same component names. Similarly, the specific positions selected in the description, e.g. top, bottom, side, etc., refer to the actual drawing being described and, when a different position is described, can also be transposed in terms of meaning to the new position. Furthermore, individual features from the different examples of embodiments illustrated may be regarded as independent solutions to the invention in their own right.

FIGS. **1** to **3** illustrate an embodiment of the binding mounting system **1** proposed by the invention. This binding mounting system **1** is pre-mounted on an appropriate ski **2**, in particular an Alpine ski, at the factory, after which a desired ski binding **3** merely has to be fitted with the binding mounting system **1** by the retailer or user, which will take very little time and will require no drilling work. The ski binding **3** consists, as standard, of a front jaw **4** for releasably retaining the front region of a ski boot and a heel jaw **5** for releasably retaining the heel region of the ski boot of a skier.

The binding mounting system **1** is secured to the top face **7** of the ski **2** by means of fixing elements **6**, in particular by standard fixing screws. The plate-shaped binding mounting system **1** is mounted on the ski **2** at the factory by the manufacturer of the skis **2** and the binding mounting system **1**.

The binding mounting system **1** comprises at least one plate-shaped base element **8** which is firmly screwed onto the top face **7** of the ski **2** by means of the fixing elements **6** for the purpose of mounting the ski binding **3**. The base element **8** or binding mounting system **1** is therefore disposed between the top face **7** of the ski **2** and the ski binding **3** that will subsequently be mounted by the retailer, customer or user.

By preference, the plate-shaped base element **8** is made in two parts and comprises a front plate component **9** for the front jaw **4** and a separate rear plate component **10** assigned to the heel jaw **5**. The base element **8** or plate components **9**. **10** are preferably made from a plastics material and are preferably injection-moulded components.

The base element **8** or the plate components, **10** have longitudinal guide mechanisms **11**, **12** for the front jaw **4** and the heel jaw **5**. The longitudinal guide mechanism **11** for the front jaw **4** and the longitudinal guide mechanism **12** for the heel jaw may be integral elements of the plate components **9**, **10**, in which case appropriate guide paths will be moulded into the plate components **9** and **10**.

By preference, however, the longitudinal guide mechanisms **11**, **12** for the front and back jaws **4**, **5** will be provided as separate guide components **13**, **14** made from a metal material.

The guide components **13**, **14** can therefore be mounted on the respective plate components **9**, **10** and, like the plate components **9**, **10**, the fixing elements **6** will be inserted through them in order to provide a screw fitting with the ski **2**. The guide components **13**, **14** and the plate components **9**, **10** lying underneath them are therefore jointly mounted and firmly screwed onto the ski **2** by means of the same fixing elements **6**. The cross section of the longitudinal guide mechanisms **11**, **12** and the guide components **13**, **14** may be squared, C- or U-shaped or alternatively of other designs that will enable the front and heel jaws **4**, **5** to be slidably guided in a longitudinal direction. The underside of the housing of the front and heel jaws **4**, **5** will have guide regions or guide members matching the respective guide components **13**, **14**.

The longitudinal guide mechanisms **11**, **12** and the guide components **13**, **14** operate in conjunction with the matching guide members on the front and heel jaws **4**, **5** to allow the front jaw **4** and the heel jaw **5** to slide independently of one another in a longitudinal direction—arrow **15**—of the base element **8** or the ski **2**. The capacity of the front jaw **4** and the heel jaw **5** to move in the longitudinal direction—arrow **15**—of the base element **8** or the ski **2** is the only freedom of movement which the ski binding **3** is permitted by the respective longitudinal guide mechanisms **11**, **12**. In a direction perpendicular to the plate-shaped base element **8** and to the plate components **9**, **10** and in all directions running transversely to the longitudinal direction—arrow **15**—the front jaw **4** and the heel jaw **5** are held immobile by the longitudinal guide mechanisms **11**, **12**. The longitudinal guide mechanisms **11**, **12** therefore permit a linear sliding action of the front jaw **4** and the heel jaw **5** in a longitudinal direction—arrow **15**—of the base element **8** or ski **2** only.

The binding mounting system **1** also has a positioning and locking device **16** to retain the front jaw **4** and the heel jaw **5** in the desired, adjustable position in the longitudinal guide mechanisms **11**, **12** relative to the plate components **9**, **10**. The positioning and locking device **16** therefore prevents the front jaw **4** and the heel jaw **5** from totally sliding out of the longitudinal guide mechanisms **11**, **12** when in the activated position. The positioning and locking device **16** is disposed between the front and rear longitudinal guide mechanisms **11**, **12** and is permanently fixed to the ski **2**. By preference, the positioning and locking device **16** is assigned to the front plate component **9** and is rigidly joined thereto. Advantageously, the positioning and locking device **16** is moulded onto the front plate component **9** so that the front plate component **9** and the positioning and locking device **16** form an integral unit. The positioning and locking device **16** is therefore also non-slidably secured to the ski **2** when the front plate component **9** is mounted on the ski **2**.

The permanently fixed positioning and locking device **16** has at least one raised portion **17**, relative to a plane **19** parallel with the top face **7** of the ski **2** and parallel with a bearing surface **18** of the binding mounting system **1** on the ski **2**. By preference, a plurality of raised portions **17** are provided in the form of teeth **20**, aligned in the plane **19** parallel running parallel with the bearing surface **18**. The raised portions **17** or the teeth **20** run transversely to the longitudinal direction—arrow **15**—and transversely to the guide direction of the longitudinal guide mechanisms **11**, **12** and are essentially parallel with the bearing surface **18** of the binding mounting system **1** facing the ski **2**. The raised portions **17** or teeth **20** spaced apart from one another in the longitudinal direction—arrow **15**—have relatively steep flanks **21** or relatively steep tooth flanks with respect to the horizontally lying plane **19**. A flank angle **22** between two flanks **21** of a raised portion **17** will subtend an angle of between 0° and 90°. In the first of these extreme instances in which the flank angle **22** is 0°, the two flanks **21** of a raised portion **17** extend parallel with one another, which means that this is the steepest design that can be selected for the

flanks **21** or raised portions **17** relative to the plane **19**. A possible flank angle of from 0° to 90° therefore means that both flanks **21** of a raised portion **17** can assume anything from an acute angle to a maximum right-angle.

The raised portion **17** or the teeth **20** of the positioning and locking device **16** are designed to mesh in a positive fit with recesses **23** of a matching design on a bar-shaped linking member **24**. The recesses **23** on this linking member **24** are preferably designed to have teeth **25** which match the stationary teeth **20**. The strip or bar-shaped linking member **24** has teeth **25** in one of its end regions. In the end region **26** remote from the teeth **25**, the linking member **24** is connected to or coupled in displacement with the front jaw **4**. The end region **26** of the linking member **24** may be connected to the housing of the front jaw **4** or alternatively with the housing of the heel jaw **5** by means of a rivet, screw and/or catch connection. The connection may also permit a relative pivoting movement of the parts joined to one another about a vertical pivot axis **27**. The front jaw **4** or alternatively the heel jaw **5** can therefore be retained and prevented from sliding of its own accord in the respective longitudinal guide mechanism **11**, **12** by means of the bar-shaped linking member **24**, starting from the central positioning and locking device **16**. Particularly when the positioning and locking device **16** is locked in position by the linking member **24**, flexibility of which is restricted, the front jaw **4** and the heel jaw **5** will not be able to slide out of the relevant longitudinal guide mechanism **11** or **12**.

Furthermore, another strip or bar-shaped linking member **28** is provided, which extends, starting from the central positioning and locking device **16**, to the other coupling member of the ski binding **3**, in particular to the heel jaw **5**. An end region **29** of the linking member **28** co-operating with the heel jaw **5** is moveably coupled with the housing of the rear jaw **5**, being riveted, screwed, welded, latchably or otherwise joined thereto. The end region **30** of the linking member **28** co-operating with the positioning and locking device **16** can also be latched and secured in the desired position in the region of the positioning and locking device **16**. To this end, in the end region **30** facing the positioning and locking device **16**, the linking member **28** has at least one recess **31**, preferably several recesses **31** provided in the form of teeth **32**. These recesses **31** or these teeth **32** are provided at least on the underside **33** of the linking member **28**. The teeth **32** on the underside **33** of the linking member **28** co-operating with the positioning and locking device **16** may be designed so as to mesh in a positive fit with the teeth **20** of the positioning and locking device **16**.

By preference, however, the recesses **31** in the second linking member **28** to the heel jaw **5** area designed to mesh in a positive fit in a matching raised portion **34** or in matching teeth **35** on a top face **36** of the first linking member **24**. In particular, the recesses **31** on the underside **33** of the second linking member **28** can be displaced by meshing in a positive fit with matching raised portions **34** on the top face **36** of the first linking member **24**.

The raised portions **34** on the top face **36** of the first linking member **24** have flanks **37** aligned in a relatively flat arrangement. In particular, a flank angle **38** between two flanks **37** of a raised portion **34** is between 90° and 170°. In other words, the flanks **37** of the raised portions **34** on the top face **36** of the first linking member **24** may assume anything from a right-angle to an almost extended flank angle **38**. In particular, two flanks **37** of a raised portion **34** subtend a right-angle or an obtuse angle.

Due to the relatively steep flanks **21** of the first linking member **24**, the latter can be latched into the desired position by means of the positioning and locking device **16**, as a result of which the corresponding coupling member, in particular the front jaw **4** will initially be retained in its position by means of a specific force which can be manually overcome. Thereafter, the end region **30** of the linking member **28** can be pushed onto the linking member **24** and slid along it without causing any shift in the already positioned first linking member **24**. This is achieved due to the fact that the relatively steep flanks **21** of the teeth **20** oppose any shift in the already positioned or adjusted linking member **24**, whilst the relatively flat flanks **37** on the top face of the linking member **24** permit a relative shift of the second linking member **28** relative to the first linking member **24** lying underneath.

In particular, the second linking member **28** moves in a ratchet action across the top face **36** of the first linking member **24** so that the linking member **28** is displaced in a longitudinal direction—arrow **15**.

By preference, the linking member **24** is coupled with the front jaw **4** and the linking member **28** with the heel jaw **5**. Consequently, it is preferable if the front jaw **4** is firstly pushed into the front longitudinal guide mechanism **11** of the binding mounting system **1** and positioned accordingly. Then, the heel jaw **5** is pushed into the longitudinal guide mechanism **12** and positioned accordingly at the desired sole length of the respective ski boot. The teeth **25**, **32**, **35** therefore enable the front or heel jaw **5** to be displaced in a stepped motion. These ratchet steps ensure that the front and rear jaws **4**, **5** can be effortlessly and accurately positioned at the position corresponding to the desired sole length, ruling out any unacceptable intermediate positions. Markings can be provided on the base element **8** and/or the linking members **24**, **28** to assist in finding the desired or required position of the front and heel jaws **4**, **5**, as will be explained in more detail below.

The fixing member of the positioning and locking device **16** is preferably provided in the form of a screw-type fixing member **39**, by means of which the end regions of the linking members **24**, **28** can be pre-tensioned in the direction of the positioning and locking device **16** if necessary. In particular, when the fixing member **39** is activated or if a permanently screwed fixing member is provided, the end regions **30** of the linking members **24**, **28** co-operating with the positioning and locking device **16** are prevented from rising so that the positive-fit connection between the raised portions **17**, **34** and the co-operating recesses **23**, **31** is secured. The fixing member **39** is preferably provided in the form of a fixing screw **40** with a screw axis **41** disposed perpendicular to the bearing surface **18**. Accordingly, an internal thread matching the thread of the fixing screw **40** is provided on the positioning and locking device **16** or a threaded but **42** is retained on the positioning and locking device **16**, into which a threaded portion of the fixing screw **40** can be screwed. By preference, the threaded nut **42** is a flange nut. The underside of the screw head **43** of the fixing screw **40** therefore acts as a contact surface for applying a contact pressure to the linking members **24**, **28** in the direction of the positioning and locking device **16** so that the linking members **24**, **28** can be firmly clamped onto the toothed surface of the positioning and locking device **16**. For safety reasons, the fixing screw **40** is at least a Phillips screw or a screw that can be operated using a specially designed tool only.

The linking members **24**, **28** are preferably bar-shaped members punched from metal plates and are also totally traction and largely crush resistant. However, the strip or bar-shaped linking members **24**, **28** are relatively flexible in

a direction perpendicular to the bearing surface **18** and are deformable in an elastically resilient manner.

As a result, in the event of any torsion or bending in the binding mounting system **1** in a direction perpendicular to the bearing surface **18**, there will be certain longitudinal compensation in the coupling members of a ski binding **3**, so that the front and heel jaws **4**, **5** will be slidably retained in the co-operating longitudinal guide mechanisms **11**, **12**.

At least the end regions **30** of the linking members **24**, **28** facing the positioning and locking device **16** will be provided in the form of racks so that they can be displaced in a meshing action with the profiled top face of the positioning and locking device **16**.

At least a part-region of the positioning and locking device **16** and the toothed regions of the linking members **24**, **28** will be covered by a cover element **44** as seen in a plan view and from the side. The cover element **44** prevents any build-up of clumps of ice or snow on the positioning and locking device **16** and the components cooperating with it, e.g. the linking members **24**, **28**. The cover element **44** has a substantially U-shaped cross section, which means that the cover element **44** may extend at least across part regions of the top face and side regions of the positioning and locking device **16**.

A friction-reducing member, in particular a slide plate **45** is provided in the end region of the front jaw **4** facing the positioning and locking device **16**, in order to provide low-friction support for a ski boot on the binding mounting system **1**. This slide plate **45** is attached to the front jaw **4** or joined therewith in displacement. By preference, the slide plate **45** and the cover element **44** overlap with one another and are telescopically slidable relative to one another. The overlap region is selected such that there will be no gap between the slide plate **45** and the cover element **44** even when the farthest possible slide positions are reached. Because the slide plate **45** is coupled with the front jaw **4** in displacement, the forces on the front jaw **4** in the different positions of adjustment remain largely constant, offering the advantage of safety features. In particular, the coupling between front jaw **4** and slide plate **45** in all positions of adjustment of the ski binding **3** will ensure that the slide plate **45** will always be kept at a distance of approximately 30 mm behind a boot tip.

The cover element **44** may be mounted on the binding mounting system **1** by means of the central fixing member **39** or by means of the fixing screw **40** used to secure the front and heel jaws **4**, **5**. This being the case, the fixing screw **40** is inserted through the base plate of the U-shaped cover element **44** and the underside of the screw head **43** is moved to bear on the base plate of the cover element **44**. When the fixing screw **40** is tightened down, the cover element **44** duly pushes the linking members **24**, **28** tightly against the positioning and locking device **16**. As a result, not only are the linking members **24**, **28** non-slidably secured but the cover element **44** is also firmly clamped. The length of the fixing screw **40** and the dimensions of the cover element **44** are therefore selected so that if not screwed in or if incorrectly screwed in, it will not be possible to use or access a ski binding **3**.

Another orifice or a transparent viewing window is provided in the cover element **44** on a level with the fixing member **39** in the longitudinal direction—arrow **15**—of the binding mounting system **1** to assist in adjusting the position of front and heel jaws **4**, **5**. Individual length markings or value specifications on the linking member **24** and the linking member **28** can be seen through this viewing window without having to remove the cover element **44**. In order to be able to differentiate more easily between the linking members **24**, **28** when adjusting the front and heel haws **4**, **5**, the linking members **24** and **28** are of different colours.

In an end region facing the front plate component **9**, the rear plate component **10** of the binding mounting system **1** houses a braking device **46** for a ski **2**, known per se, as indicated by broken lines, used if the ski boot of a user detaches from the ski. A mounting seat **47** for the braking device **46** on the rear plate component **10** is designed so that the braking device **46** forms an independent one-piece unit with the rear plate component **10**. This closed unit then merely has to be screwed onto an appropriate ski **2**. As with the longitudinal guide mechanism **12**, it is preferable if the braking device **46** is pre-mounted on the rear plate component at the factory, in which case the assembled unit delivered to the retailer or end-user will consist of a ski **2** and the binding mounting system **1**.

FIG. **4** illustrates another embodiment of the binding mounting system **1** proposed by the invention, the same reference numbers being used for components already described above.

In this embodiment, the positioning and locking device **16** has a single raised portion **17**, which can be displaced by a positive-fit meshing action in one of several orifices **48** in the linking member **24** and/or in the linking member **28**. The raised portion **17** of the positioning and locking device **16** is preferably of a cylindrical design and has a central bore with an internal thread **49** in the centre region.

The part of the raised portion **17** which is preferably cylindrical in design and stands out from the plane **19** has an external diameter **50** which more or less matches an internal diameter **51** of the orifices **48** in the linking member **24** and/or **28**. Accordingly, the orifices **48** match the raised portion **17** and the raised portion **17** may be inserted in one of the many orifices **48** in the linking member **24** and in the linking member **28** as required.

Optionally, the orifices **48** in one of the linking members **24**, **28** may also be designed in the form of crimped indentations with outer lateral faces having a relatively flat elevation, as may be seen from the linking member **24**. An internal diameter **51** of the orifices **48** in the second linking member **28** will then approximately match an external diameter **52** of the crimped orifices **48** and raised portions **34** on the linking member **24**. By means of the orifices **48** produced by a stamping process and the bulbous raised portions **34** surrounding them, the second linking member **28** can be slid across the raised portions **34** and positioned in steps. The raised portions **34** produced in the linking member **24** by the crimping process so as to have inclined external faces provide an inclined contact surface for the resiliently elastic linking member **28**, arranged above, against the linking member **24** lying underneath.

As may also be seen from FIG. **4**, the front jaw **4** or alternatively the heel jaw **5** also if necessary may be designed so that it can be detached or removed from the linking member **24** and/or **28**. In particular, a connecting device **53** is provided, by means of which the linking member **24** can be mechanically connected to the front jaw **4**. By preference, this connecting device **53** is provided in the form of a ratchet connection **54** with matching projections and recesses disposed in an elastically resilient mounting on the linking member **24** and the front jaw **4**. As a result, the linking member **24**; **28** can be mounted, packaged and sold separately from the front and heel jaws **4**; **5**, thereby

offering compact packing units. An end-user or retailer will then couple the front and heel jaws **4**; **5** in a simple manner with the bar-shaped linking member **24**; **28** using the connecting device **53** and the ratchet connection **54**. The ratchet connection **54** is preferably designed as a snap-fit connection. Optionally, it would also be possible to connect said jaws to the respective linking members **24**, **28** by means of a screw fitting.

The ratchet connection **54** is preferably provided as an elastically resilient, flexible release **55** in the linking member **24**; **28**, the end regions of which will be brought to bear in a matching recess **56** in the front jaw **4** or in the heel jaw **5**.

The connecting device **53** will therefore be a quick-fit system, enabling rapid assembly, preferably without the need for any tools or aids.

The connecting device **53** may also be provided in the form of a threaded spindle arrangement **57**—in a manner known per se. As a result of this threaded spindle arrangement **57**, the heel jaw **5** in particular could be joined to the linking member **28** co-operating therewith if necessary, if the heel jaw **5** and the linking member **28** are provided as separate components. It will also be possible—in a manner known per se—to displace this threaded spindle arrangement **57** in a longitudinal direction of the linking member **28** if the spindle is rotated. This spindle will then locate in matching slit-shaped recesses in the linking member **28** in a positive fit. If necessary, it would also be possible to use this threaded spindle arrangement **57** to separate the heel jaw **5** from the linking member **28**.

The threaded spindle arrangement **57** might also be an elastically resilient thrust bearing. This elastically resilient thrust bearing would cause the heel jaw **5** to apply a specific pre-tensioning force to the ski boot.

One particular advantage which all of the embodiments described above have in common is that because of the positioning and locking device **16**, a single fixing member **39** can be used simultaneously both to adjust and lock the distance between front and back jaws **4**, **5** and the relative position of the ski binding **3** with respect to the ski **2** as desired.

FIG. **5** illustrates another embodiment of the binding mounting system **1** proposed by the invention, the same reference numbers being used to denote the same components as those described above.

In this case, a one-piece bar-shaped linking member **24** is provided, to the end regions of which the front jaw **4** on the one hand and the heel jaw **5** on the other can be secured by means of the connecting device **53**. In the example illustrated here, both the front jaw **4** and the heel jaw **5** are joined to the end regions of the linking member **24** by means of a connecting device **53** in the form of a threaded spindle arrangement **57**. Consequently, both the front jaw **4** and the heel jaw **5** can be displaced as required in a longitudinal direction—arrow **15**—of the linking member **24** or the base plate **8** and fixed in the desired position without the need for locking mechanisms. Because the front jaw **4** and the heel jaw **5** can be displaced relative to the linking member **24** or relative to the plate-shaped base member **8**, the relative position of the ski binding **3** with respect to the base element **8** and a ski **2** can be varied as required. Markings on the housing of the front and/or heel jaws **4**, **5** and on the linking member **24** or the base element **8** facilitate adjustment to the respective desired position.

Several orifices **48** are provided in the central region of the linking member **24**, spaced at a distance apart from one another in the longitudinal direction of the linking member **24**. A distance between the orifices **48** corresponds to the smallest possible adjustment or displacement width of the linking member **24** relative to the base element **8**. The shapes and/or dimensions of the orifices **48** are selected so that the raised portion **17** of the positioning and locking device **16** can be at least partially inserted in them. In particular, the desired orifice **48** of the plurality of orifices **48** in the linking member can be displaced by a positive-fit meshing action with the raised portion **17**.

The fixing member **39**, in particular the fixing screw **40** enables the linking member **24** and the ski binding **3** to be secured in the assumed desired position relative to the base element **8**.

By means of the connecting devices **53**, in particular the threaded spindle arrangements **57**, an adjustment within an adjustment range of approximately 100 mm can be made between the smallest and the largest boot size. Furthermore, the relative position of the ski binding **3** with respect to the base element **8** can be adjusted to a certain degree.

Basically, the relative position of the ski binding **3** with respect to a ski **2** can also be adjusted or varied by means of the plurality of orifices **48** in the centre region of the linking member **24** in co-operation with the positioning and locking device **16** on the base element **8**.

Optionally, a height of the raised portion **17** measured perpendicular to the plane **19** is selected so as to match a thickness of the linking member **24** so that the linking member **24** is able to move freely in the height direction to a certain extent. As a result, the linking member **24** will initially not be deformed if the base element **8** or the ski **2** are subjected to bending but will largely remain straight, which means that the distance between front and heel jaws **4**, **5** will not be shortened.

By preference, the end regions of the two longitudinal guide mechanisms **11**, **12** and the guide components **13**, **14** facing away from each other are supported on the top face **7** of a ski **2** by means of spacing members **59**, in particular in the form of spacing sleeves **60**. The spacing members **59** pass through the plate component **9** and the plate component **10** by means of longitudinal bores **61** disposed in the longitudinal direction—arrow **15**—of the binding mounting system **1**. A height or length of the spacing sleeves **60** is selected so as to be slightly greater than a depth **62** of the longitudinal bores **61** as measured in the direction of the thickness of the plate components **9**, **10**. As a result, the plate components **9**, **10** are still able to move with respect to the longitudinal guide mechanisms **11**, **12** and guide components **13**, **14** producing a longitudinal compensation in the event of any bending in the binding mounting system **1** and preventing any torsion in the ski **2** so that the inherent flexibility of the ski **2** will largely remain unaffected. This longitudinal compensation is made possible in particular due to the longitudinal bores **61** in the plate components **9**, **10** and due to the fact that the end regions of the longitudinal guide mechanisms **11**, **12** facing away from one another are mounted at a slightly higher level than the plate components **9**, **10** lying underneath. The example described above may clearly also be used with the embodiments illustrated in FIGS. **1** to **4**.

For the sake of good order, it should be pointed out that in order to provide a clearer understanding of the binding mounting system **1**, it and its component parts are not illustrated to scale, and/or have been enlarged and/or reduced.

The independent solutions proposed by the invention to the set task can be obtained from the description.

Above all, the individual embodiments and features illustrated in FIGS. **1**, **2**, **3**; **4**; **5** may be construed as independent solutions to the invention in their own right. The respective tasks and solutions may be obtained from the detailed descriptions of these drawings.

LIST OF REFERENCE NUMBERS

1. Binding mounting system
2. Ski
3. Ski binding
4. Front jaw
5. Heel jaw
6. Fixing member
7. Top face (ski)
8. Base element (plate-design)
9. Plate component (front)
10. Plate component (rear)
11. Longitudinal guide mechanism (front)
12. Longitudinal guide mechanism (rear)
13. Guide component
14. Guide component
15. Arrow (longitudinal direction)
16. Positioning and locking device
17. Raised portion
18. Bearing surface
19. Plane
20. Teeth
21. Flank
22. Flank angle
23. Recess
24. Linking member
25. Teeth
26. End region (of front jaw)
27. Pivot axis
28. Linking member
29. End region (of heel haw)
30. End region (of positioning device)
31. Recess (underside of **28**)
32. Teeth
33. Underside
34. Raised portion (top of **24**)
35. Teeth (top of **24**)
36. Top face (of linking member **24**)
37. Flank
38. Flank angle
39. Fixing member
40. Fixing screw
41. Screw axis
42. Threaded nut
43. Screw head
44. Cover element
45. Slide plate
46. Braking device
47. Mounting seat
48. Orifice
49. Internal thread
50. External diameter
51. Internal diameter
52. External diameter
53. Connecting device
54. Ratchet connection
55. Release
56. Recess
57. Threaded spindle arrangement
58. Height
59. Spacing member
60. Spacing sleeve
61. Longitudinal bore
62. Depth

What is claimed is:

1. A binding mounting system for rapidly mounting a slidable front jaw and a slidable rear jaw of a ski binding onto a ski having a top face, which comprises

(a) a plate-shaped base element having a bearing surface and mounted on the top face of the ski,

(b) a front longitudinal guide mechanism and a rear longitudinal guide mechanism on the base element, the guide mechanisms preventing vertical and transverse displacements of the front jaw and the rear jaw to be mounted on the base element relative to the bearing surface thereof,

(c) a positioning and locking device immobile relative to the base element and arranged thereon between the front and rear longitudinal guide mechanisms at a distance therefrom, the positioning and locking device having a top face remote from the base element and

(1) having at least one rigid raised portion with steep flanks on the top face, and

(d) a bar-shaped linking member extending towards a respective one of the guide mechanisms and having an end linked to a respective one of the jaws, the linking member having several recesses matching the rained portion to provide a positive fit between the raised portion and one of the recesses.

2. The binding mounting system of claim **1**, wherein the guide mechanisms are integrally formed on the base element.

3. The binding mounting system of claim **1**, wherein the guide mechanisms are separate and secured to the base element.

4. The binding mounting system of claim **1**, wherein the rigid raised portion is comprised of several teeth extending transversely to a longitudinal direction of the base element in a plane extending parallel to the bearing surface of the base element, each tooth having steep flanks, and the recesses in the linking member are formed by teeth providing a positive fit with the teeth of the rigid raised portion.

5. The binding mounting system of claim **1**, wherein the positioning and locking device comprises a screw-threaded fixing member having an axis extending perpendicularly to the bearing surface of the base element, turning of the screw-threaded fixing member vertically adjusting the linking member relative to the raised portion and thereby selectively providing a released position and a locked position wherein a respective one of the jaws is locked in a longitudinal direction of the guide mechanisms.

6. The binding mounting system of claim **1**, wherein the recesses are disposed in an underside of the linking member facing the base element.

7. The binding mounting system of claim **1**, wherein the linking member has at least one raised portion with relatively flat flanks facing the top face of the positioning and locking device.

8. The binding mounting system of claim **1**, wherein the linking member is comprised of two parts, a respective one of the linking member parts having an end linked to a respective one of the jaws, a first one of the linking member parts having raised portions on a top face thereof and a second one of the linking member parts having matching recesses on an underside thereof, the recesses matching the raised portions to provide a positive fit between the raised portions and the recesses.

9. The binding mounting system of claim **1**, wherein the plate-shaped base element is comprised of two parts, the

front jaw being mounted on a front one of the base element parts and the rear jaw being mounted on a rear one of the base element parts.

10. The binding mounting system of claim **1**, further comprising a cover element of substantially U-shaped cross section covering the positioning and locking device.

11. The binding mounting system of claim **1**, wherein the positioning and locking device comprises a single fixing member enabling the front and rear jaws to be positioned independently of each other relative to the base element while retaining a sliding movement of the jaws in the longitudinal guide mechanisms in the event of deformation of the base element or the ski.

12. The binding mounting system of claim **4**, wherein the flanks of the teeth project substantially vertically from a horizontal plane.

13. The binding mounting system of claim **7**, wherein the raised portion is comprised of several teeth extending transversely to a longitudinal direction of the base element, each tooth having relatively flat flanks.

14. The binding mounting system of claim **8**, wherein the raised portions and recesses are formed by teeth of triangular cross section with relatively flat flanks.

15. The binding mounting system of claim **8**, wherein the raised portions and recesses are sinuous.

16. The binding mounting system of claim **8**, wherein the ends of the linking member parts facing the positioning and locking device are in flush alignment and are fork-shaped.

17. The binding mounting system of claim **8**, wherein the two linking member parts have facing overlapping ends opposite the ends linked to the jaws, and further comprising a fixing member securing the overlapping ends to the positioning and locking device.

18. The binding mounting system of claim **9**, wherein the positioning and locking device is joined to the front base element part.

19. The binding mounting system of claim **9**, further comprising a braking device for the Ski, the rear base element part having a bearing seat for the braking device at an end of the rear base element part facing the front base element part.

20. The binding mounting system of claim **10**, wherein the element also partially covers the linking member.

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